

**Distinguishing between the Effects of Residential Mobility and Neighborhood
Change on Children's Well-Being**
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We develop a method for separating the effects of residential mobility and neighborhood change on children's well-being, and report the results of an analysis using that method. Children's neighborhoods can vary over their lifetime in two ways. First, children change residences with their families. Secondly, neighborhoods change over time, even as some residents stay. Although the quality of a child's neighborhood can fluctuate because of either their own migration or the movement of those around them, the two processes do not necessarily influence children in the same way. Despite this, researchers rarely examine the influence of each process separately. Identifying the independent influence of each, if it exists, is an important step toward fully understanding how much and how characteristics of neighborhoods influence children.

The relationship between characteristics of neighborhoods and children's well-being is well-documented (Furstenberg and Hughes 1997; Jencks and Mayer 1990; Massey et al. 1992; Pebley and Sastry 2004; Sampson et al. 2002; Small and Newman 2001). Experimental and rigorous observational studies have demonstrated that characteristics of neighborhoods structure children's opportunities, activities and achievement (e.g., Harding 2004; Goering and Feins 2003), albeit to a smaller extent than individual and family characteristics. Understanding these relationships in depth has proven more challenging than identifying associations, for a number of reasons. First, many characteristics of children's neighborhood context are correlated with characteristics of their more immediate individual and family context. These characteristics are often unobserved by researchers, making it hard to draw meaningful conclusions about whether neighborhoods independently affect children's well-being. Secondly, establishing associations between neighborhood poverty and children's academic achievement, to give one example, says nothing about the mechanisms through which disadvantage affects children, and how these relationships differ by characteristics such as age and race/ethnicity. Third, the cross-sectional definition of neighborhoods employed in most studies potentially misrepresents children's long-run experience, and does not permit an understanding of whether changes in children's neighborhood context are influential. We build on this third point.

In earlier work, Jackson and Mare (2007) integrate a temporal dimension into research focusing on the determinants and consequences of children's neighborhood quality. We examine how much neighborhood change and residential mobility contribute to children's exposure to disadvantage, as well as whether ignoring these processes in studies of neighborhood effects misrepresents relationships between neighborhoods and child well-being. We use both regional and national data to broaden the study population and to uncover regional differences in neighborhood dynamics and effects.

Findings from this analysis suggest that residential mobility plays a significant role in determining children's exposure to poor neighborhoods. Although a strikingly different picture does not emerge when we incorporate these residential histories into estimates of the influence of neighborhood characteristics on children's well-being, we do observe some differences in the magnitude of associations within cross-sectional vs. longitudinal scenarios. The modest differences that we observe over a short time period suggest that larger variability in people's local environments, which likely exist over a longer period of time, would produce greater differences.

One limitation of that analysis is that it did not differentiate between the effects of residential mobility and neighborhood change. Motivated by that limitation, we develop a method for disaggregating longitudinal measures of neighborhood quality into components due to residential mobility and neighborhood change. Although we apply this method to the case of the neighborhood, it can also be used as a starting point for separating components of other longitudinal processes.

Why Separate the Effects of Residential Mobility and Neighborhood Change?

Thinking about neighborhood processes involves a number of conceptual and empirical considerations. Within the constraint of having longitudinal data, it is possible to conceptualize a change in one's local environment as involving two parts: a move (regardless of its direction) and a change in neighborhood conditions. With respect to a move, residential mobility is negatively related to children's well-being (e.g., Haveman et al. 1991; Long 1975). Haveman et al. (1991), for example, treat the number of times a child's household moved while growing up as an indicator of family stress, and find that this measure is negatively associated with high school completion. The authors do not examine variation in this relationship by the type of move, however, instead assuming that all moves, whether they indicate an upward or downward socioeconomic shift, influence children equally.

This leads to the second component: a change in neighborhood quality. Because children consistently exposed to disadvantage may be subject to more negative influences than those who only briefly experience poor and/or unsafe surroundings, mobility out of a poor neighborhood may benefit children in both the short and long-term. Similarly, changes that occur in the neighborhood around children who stay may have both positive and negative effects. Migration—a consequence of many factors, including urban redevelopment, housing size and quality, socioeconomic factors and proximity to economic activity—can alter the composition of neighborhoods over time. An increase in a neighborhood's affluence over time due to changing population composition, for example, may expose children to the institutions and resources that accompany wealth if they are able to continue living in the neighborhood, and may in turn positively alter their behaviors and trajectories.

Finally, a third factor is relevant in thinking about changes in children's neighborhoods: in addition to causing a positive or negative shift in surroundings, the change that occurs can be either voluntary or involuntary. Because residential mobility is by definition more

voluntary than a change in neighborhood quality that occurs without mobility, children and families may be more resilient to a downward shift in quality in the scenario of mobility than in one of neighborhood change. Families may have a heightened sense of comparative disadvantage if they do not choose their environments. Any smaller negative influence of downward residential mobility may be offset, however, by a negative independent effect of residential mobility.

Without disaggregating longitudinal measures of the children's neighborhoods, it is impossible to separately evaluate the extent to which the relationship between changes in neighborhood quality and children's well-being is due to the transition involved with residential mobility, changes in neighborhood quality due to mobility, and changes in neighborhood quality due to compositional shifts. In our previous work we sought to understand the role of these processes in determining children's environments; we now consider whether they differ in their effects on children.

Data and Methods

Data will come from both waves of the Child Development Supplement (CDS) of the Panel Study of Income Dynamics (PSID). The PSID-CDS was launched in 1997 with the goal of collecting detailed information about economic and social disparities in child development on a national level (PSID-CDS User Guide 1997). PSID respondents were selected to participate in the CDS if they had at least one child under the age of 13. The 1997 CDS contains information on 2,394 PSID families and 3,563 children ages 0-12, with a response rate of 88%. In 2002 a follow-up wave was conducted, providing information on 2,019 families and 2,907 children ages 5-18, with a response rate of 91% (PSID-CDS User Guide 2002).

The PSID-CDS data are longitudinal (two waves to this point), and also include retrospective residential histories. The residential histories provide geocoded data for all of children's residences, either during their whole lifetime or since their caregiver's inclusion in the PSID sample. These histories permit examination of the total number of moves, the exact dates of residential moves and the duration in each residence. We link children and their residential histories to data from the U.S. Census, which provides information on specific characteristics and services of communities. Census data range from 1980-2000, depending on the age of the child, and allow us to connect children with the economic and racial/ethnic composition of their neighborhoods, among other characteristics. The decennial data are used to linearly interpolate values for neighborhood characteristics in the years between.

We illustrate our method below using the example of a neighborhood's poverty rate. We isolate levels of neighborhood poverty from poverty changes due to residential mobility and neighborhood change. We observe children's outcomes in 1997 and 2002, and have information about neighborhoods in 1997, 1999 and 2001 (and, from interpolation, in 1998 and 2000). Within that timeline the method can be summarized by:

$$\Delta Y = \alpha + \gamma_1[(X_3 - X_1)(1 - m)] + \gamma_2[(X_3 - X_{2.5}) + (X_2 - X_{1.5})m] + \gamma_3[(X'_{2.5} - X_2) + (X'_{1.5} - X_1)m] + \gamma_4[(X_{2.5} - X'_{2.5}) + (X_{1.5} - X'_{1.5})m] + \gamma_5 m \quad (1)$$

where ΔY is the change in markers of children's well-being between 1997 and 2002 and $X_1 - X_3$ are the poverty values of children's tracts in 1997, 1999 and 2001, respectively. A set of "changeless" measures assume no poverty change in a given tract between time points: $X_{1.5}$ is the 1999 tract with 1998 poverty rate, and $X_{2.5}$ is the 2001 tract with its 2000 poverty rate. These two terms represent the end points of an interval, and indicate the poverty values that children's current neighborhoods would have if they did not experience any compositional change between years. Next, a set of "change" measures can be computed for each year; $X'_{1.5}$ is the 1997 tract with its 1998 poverty rate, and $X'_{2.5}$ is the 1999 tract with its 2000 poverty rate. m denotes whether a child has moved at least once between 1997 and 2002. These two terms represent the beginning of a time point (the prior tract), and indicate the poverty change that occurred in children's previous neighborhoods between years.

For children who do not move between 1997 and 2002, isolating the effect of neighborhood change is simple: γ_1 is the effect of changes in neighborhood poverty for children who do not move. Children who move experience multiple neighborhoods and can therefore be influenced by change in both their old and new neighborhoods. γ_2 is the effect of a poverty change in a child's new neighborhood, among children who move. γ_3 is the effect of a poverty change in a child's old neighborhood, among those who move. γ_4 is the poverty difference between movers' new and old neighborhoods: that is, it is the effect of a change in poverty due to residential mobility. Finally, γ_5 is the effect of moving itself, whether or not that move involves a change in neighborhood poverty.

We will apply this method to two dimensions of children's well-being: academic achievement and health, defined both behaviorally and physically. In addition, we will compare estimates that we obtain from this method with estimates obtained from standard measures of residential mobility.

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